

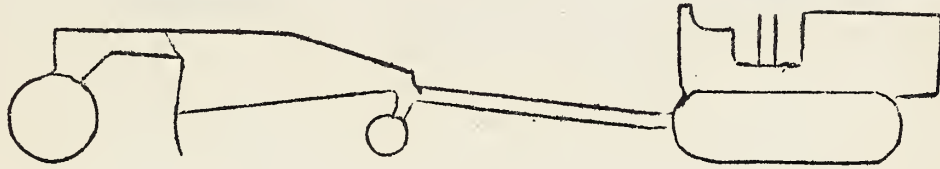
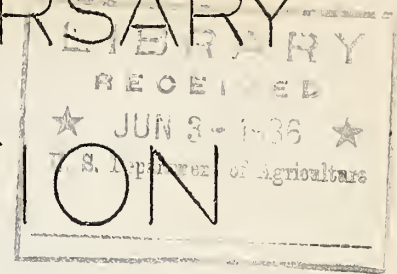
## **Historic, archived document**

Do not assume content reflects current scientific knowledge, policies, or practices.



1.9  
776ch

# FIRST ANNIVERSARY CONSTRUCTION



## HINTS

UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE

Vol. 2

Washington, D. C.

May 2, 1936.

No. 9

One year ago today the first issue of this magazine was sent to the field. From a first edition of 100 copies, it has grown to 2,500 copies. The interest of the field men has been aroused and contributions are submitted daily. From the large mass of manuscripts the Editor has quite a task of selecting those which will give a properly balanced edition.

For this issue the Editor has selected a number of the articles and illustrations which have appeared during the past year. It is hoped that they will refresh your memory and aid in better construction practice.

Thanks to all of you for your interest and assistance.

Harold L. Friend

EDITOR

(Over)

## CONTRIBUTIONS

By T. W. Norcross, Chief, Division of Engineering.

The proposal of the Washington Office to prepare and circulate "Construction Hints" was heartily endorsed by the field offices. But the success of this activity is dependent upon the cooperation of the field in sending in material that it is believed may help our some other fellow somewhere in the Service. Comparing the troubles of the editor of "Construction Hints" with those of editors of other Forest Service publications, it appears that the response of the field has been fairly satisfactory. But it could be better and if better, the value of "Construction Hints" would be increased.

Last summer on my Western field trip I urged the Regional Engineers, Construction Superintendents, foremen and others to send in a brief description of some method, device or kink which they had developed or discovered. The reaction varied. Most promised to send material. Some thought the matter too trivial or of too little value to be of service to others. Others were "too busy". Still others were bashful or modest and felt that others would consider sending in an item, "self-promotion" and would resent the action. Again I saw evidence of "separatism".

Although my efforts and those of the Editor have been fruitful, difficulty still exists in getting the number of contributions necessary to making "Construction Hints" as valuable and useful as it should be and can be.

Let's look at some of the reasons given -

"Too trivial or too little value". Why not let the Regional Engineer or the Editor decide. The chances are they will not agree.

"Too busy". This really means laziness in some cases, but more often the exercise of a preference. In other words a decision that the available time could better be used on some other work. It would be well to make a new weight determination. Maybe the past judgment was faulty. In certain cases I know it was.

"Self-promotion". I want to see full credit given and to encourage betterment. If thought that some one else is striving only to publicize himself, all he has to do in defense of himself is to send in as many or more items for "Construction Hints".

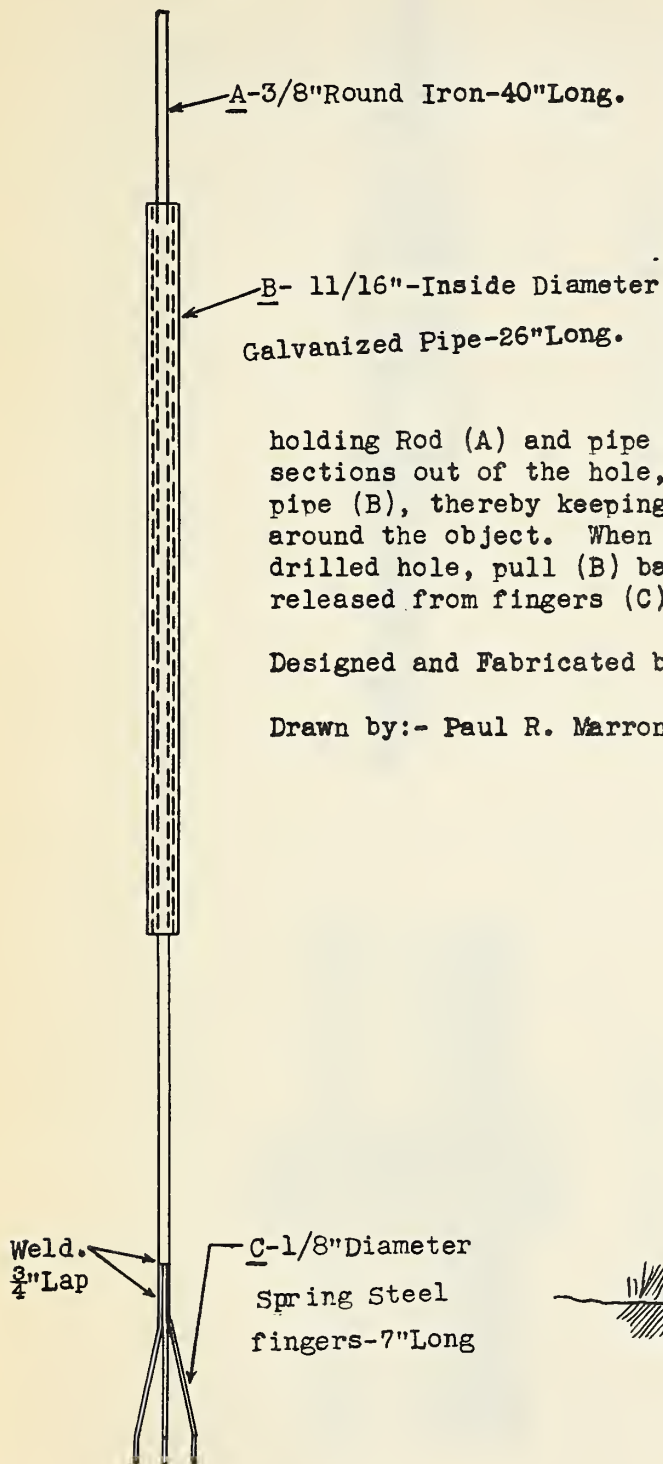
"Separatism". One of my main objectives for this year is a sharp increase in coordination, correlation and cooperation. In other words, a change from individualisms - project, Forest, Region or Washington - to a united pulling together for the good of the Service as a whole.







# TOOL FOR RETRIEVING BROKEN DRILL STEEL FROM DRILLED HOLE IN STONE

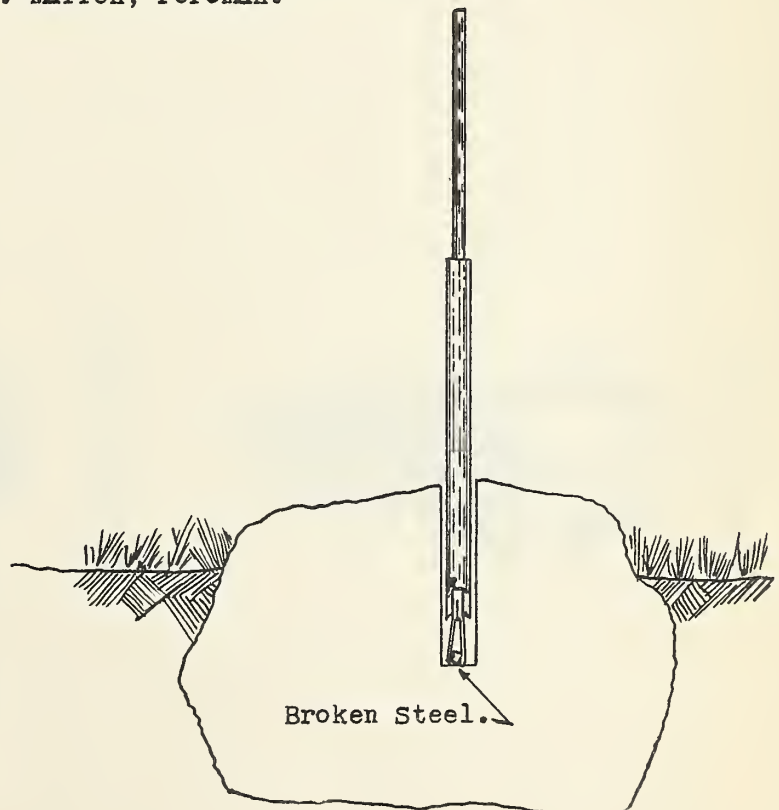


In retrieving broken drill steel from drilled hole, insert the rod (A) into hole placing steel fingers on end, over the broken steel, holding outer pipe (B) approximately one foot from end of fingers, then slide Pipe (B) down the drilled hole holding rod (A) over the broken steel, by pressing the pipe (B) down, the smaller diameter of pipe (B) gradually closes the steel fingers (C) around the object. Then

holding Rod (A) and pipe (B) in this position draw both sections out of the hole, keeping the pressure downward on pipe (B), thereby keeping steel fingers (C) compressed around the object. When tool is entirely free of the drilled hole, pull (B) back on (A) and object will be released from fingers (C).

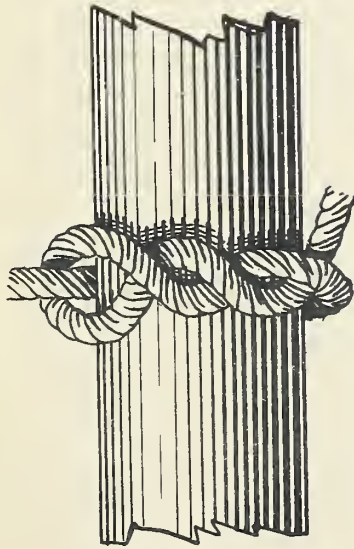
Designed and Fabricated by:- Martin Tiers, Ass't Blacksmith,  
Camp S-54, Butler, N. J.

Drawn by:- Paul R. Marron, Foreman.





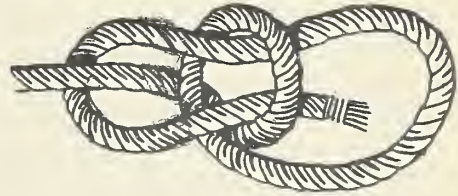




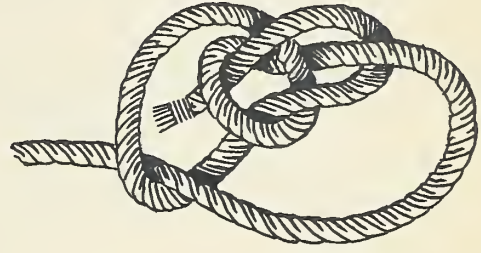
Timber Hitch



Hawser Bend



Bowline



Running Bowline



A few unofficial reports of Model 55 clutches slipping when the linings are not fully worn out indicate that operators are not taking advantage of the second adjustment. See particularly paragraph (e) below.

Lubrication - Every 4 to 5 working hours, give grease cup three complete turns. When empty, fill with correct grade of lubricant.

Every 50 working hours, remove drain plug in bottom of clutch compartment and clean hole in plug. Make sure no oil has accumulated in compartment.

Keep clutch pedal and all linkage well lubricated to insure freedom of operation. Use engine oil in cup on lower end of pedal.

Every 250 working hours and whenever clutch compartment cover is removed, put a few drops of oil on clutch release shaft bushings, clutch release sleeve, and clutch release linkage.

Clutch Adjustment - Form habit of checking free pedal travel, at beginning of each day's operation. (Free pedal travel is distance pedal pad travels forward from its extreme rear position, when lower end of pedal is against stop, to point where throw-out bearing touches retractor collar).

Clutch pedal originally has 1-3/4 inches free pedal travel. As friction facings wear, this distance gradually reduces. When travel is reduced to 3/4 inch, readjust in following manner:

- (a) Remove clutch compartment cover plate.
- (b) Loosen, but do not remove, the three clutch adjusting screws in clutch cover assembly.
- (c) Release clutch pressure by pushing pedal forward as far as possible and blocking it in this position.
- (d) Tap loosened screw heads carefully in clockwise direction until distance between clutch brake facing and throw-out bearing cup measures 5/8 inch after adjusting screws have been retightened.
- (e) After all the adjustment has been made so that the set screws have reached the extreme right end of the slot in the clutch cover, remove one screw at a time and, at the extreme left of the slot, you will find another hole threaded to take these screws, so that further adjustment may be had. These two adjustments will take care of normal wear, however, it is best to inspect this clutch each season for clutch lining renewal.

Sticking clutch - When the tractor has remained idle for a considerable length of time, a sticking clutch may be encountered. This can be overcome by removing one of the clutch adjusting screws and thoroughly flushing the clutch with kerosene.

- Vol. 2, No. 5 - March 7, 1936.

Contributed by Geo. D. Henning, Truck Trail Locator,  
Huron National Forest, R-9.

Blades removed from heavy graders because of worn cutting edge and worn ends can be used to replace cutting bits on rotary scrapers.

The blades are very hard and cannot be drilled with ordinary high-speed drills, but the proper holes may be made with a burning torch. Shaping and counter-sinking may be done with a die while still hot from the burning. The die is a punch made of tool steel, round or square as needed. The punch is tapered or shouldered to the bevel of the counter-sink and used over a hole of the proper size in a bench block or anvil. A new bolt may also be used.

In many cases existing holes may be utilized in cutting the old blade to size.

Care must be used that the hole is properly centered and not burned too large so that insufficient material is left for shaping with die.

Shoes for bulldozers and snowplows can be made also from old blades by cutting, shaping and punching. There is very little saving in making shoes for snowplows for the shoe is subjected to a great deal of wear by coming in contact with gravel road surface. The half-inch thickness does not give very long wear. Bulldozers used for earthmoving are not subjected to such severe shoe wear. A satisfactory shoe is made by cutting two pieces of blade approximately 20" long, laying them side by side with the two old cutting edges together and brazing their full length in the V-shaped joint. Each end is bent up runner-style; and the four corners may be given a little additional bend upward. Some punching may be saved by using holes already in the blade and making cutoff to conform with them. This possibility should be checked before cutting.

The cost of this work will vary according to the skill of the man and the amount of cutting and burning necessary.

- Vol. 2, No. 6, March 21, 1936.

#### Exhaust Fume Outlets for Trucks - G. W. Duncan, Region 1.

In connection with the hauling of ERA and CCC workers to and from jobs, especially since canvas covers are being provided over stake body trucks, there have been many complaints about the accumulation of fumes under this canvas cover. The danger from this is real and to prevent it Engineering has developed an exhaust fume outlet which serves the purpose satisfactorily. It consists of a pipe along the side of the cab, same size as exhaust pipe, is connected to the muffler with which the trucks are provided by means of a flexible tubing and attached to the cab by means of two braces, one at the top and one at the bottom. This extension has its outlet one foot above the top of the canvas cover, thus permitting fumes to escape where they will do no harm. The cost is \$6.75 each. Plans are available if anyone should desire them.

- Vol. 1, No. 17, December 28, 1935.



## SOIL STABILIZATION

Harold L. Friend - Washington Office

Considerable study is being made by the Division of Engineering in Washington on the subject of Soil Stabilization in connection with Forest Service roads. Changing the grading to increase stability is the oldest known method of road improvement. The use of special stabilizing substances in connection with the correct combination of road materials is of more recent origin.

The first step in building stabilized road surfaces is the arrangement of the most stable combination of available materials. The second step is the provision of the greatest degree of permanency possible by means of mechanical consolidation and the use of admixtures or waterproof coverings or both.

Stabilized roads have been developed within recent years as a distinct type, differing materially from gravel roads and sand-clay roads. They consist of well drained graded roadways with stabilized wearing courses.

An ideal stabilized wearing course will give proper support to wheel loads, will not become muddy, slippery or rutty in wet weather, will not ravel and become dusty in dry weather and can be maintained smooth, firm, and practically free from loose material under all weather conditions. Such a wearing course is composed of a mixture of graded aggregate, binder soil, and admixture in proper proportions and in quantities that will provide all-weather stability. The aggregate should be embedded in the soil mortar, leaving the surface smooth with a mosaic appearance, and practically free from floating material.

The graded aggregate has a minimum of voids and tends to lock its particles in place. The binder soil under moist conditions practically fills the voids in the aggregate and, aided by the moisture film and the admixture, binds the materials together.

Upon wetting, the clay in the binder soil should expand just enough to close the surface pores and thus prevent too much water from penetrating and softening the interior of the road surface. When expansion of the binder is too great, the sand grains are likely to become unseated and thus reduce the stability of the mixture. When the binder does not expand enough to close the pores, too much water may enter and soften the road surface.

Vol. 1, No. 14 - November 16, 1935 - Vol. 1, No. 15 - November 30, 1935.

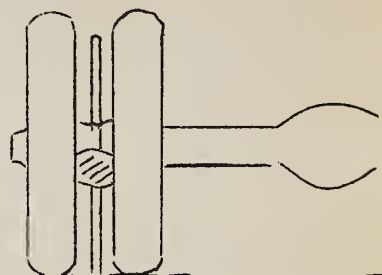
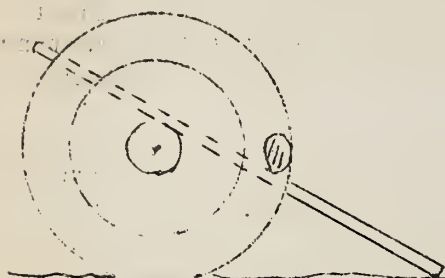
Polarity Indicator - J. S. Cotton, Region 5.

If doubt exists as to polarity of direct current such as batteries, generating plants, etc., place the two leads in salt water. The wire on which bubbles form is the negative pole.

Concrete Vibrator - J. S. Cotton, Region 5.

A jackhammer fitted with a piece of blunt steel makes an excellent vibrator for concrete forms. Care should be taken not to over vibrate the concrete; a small quiver is all that is required.

- Vol. 1, No. 11, October 5, 1935.



#### QUICK AND EASY METHOD OF REMOVING ROCKS FROM DUAL WHEELS

Submitted by Morgan, Camp S-52, Region 8, Hartburg, Tennessee.

To quickly remove rocks that become wedged between the tires on the dual wheels of trucks lay a crow-bar between the tires, going under the rock to be removed and over the axle. Back the truck slowly, until the crow-bar rests on the ground, when a slight backing of the truck will then force the rock from between the tires by the lever action of the bar. Hammering rocks out from between the wheels often cuts the tires.

- Vol. 2, No. 3, February 8, 1936.

Mr. Wm. Summers, Supt. ECW Camp 79-S, Region 9, sends the following:

ECW Camp 79-S at Manitowish, Wisconsin, has solved the problem of breaking Signals, reflex bracket type. Red glass lens.

By taking off the original bracket on Signal and attaching Signal belt through center hold of a 4" hinge, then bend other end in about the middle and bolt narrow end to truck platform.

This way when truck backs into anything, such as brush, etc., the Signal hinges up against platform.

- Vol. 1, No. 9, September 7, 1935.

